

REMARKS

I. Introduction

By the present Amendment, claim 24 has been amended. Claims 26-28 are newly presented for consideration. Accordingly, claims 1, 3, 6-12, 14-21, 24-28 remain pending in the application. Claims 1, 9, 16, 21, and 24 are independent.

II. Office Action Summary

In the Office Action of September 25, 2009, claims 1, 3, 7, 8, 11, 12, 15, 17-20, and 25 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 7,296,795 issued to Kawasaki. Claim 10 was rejected under 35 USC §103(a) as being unpatentable over Kawasaki in view of U.S. Patent No. 4,567,349 issued to Henry et al. ("Henry"). Claims 14, 16, and 21 were rejected under 35 USC §103(a) as being unpatentable over Kawasaki in view of Henry, and further in view of U.S. Patent Application No. 2004/0060421 to Kako et al. ("Kako"). Claim 24 was rejected under 35 USC §103(a) as being unpatentable over Kawasaki in view of U.S. Patent No. 3,276,425 issued to Rabb. These rejections are respectfully traversed.

III. Rejections under 35 USC §102

Claims 1, 3, 7, 8, 11, 12, 15, 17-20, and 25 were rejected under 35 USC §102(b) as being anticipated by Kawasaki. Regarding this rejection, the Office Action indicates that Kawasaki discloses a sheet transfer member that is movable and has a transfer surface that is contactable with one of the sheets so that it can be transferred by the sheet transfer member. A sheet supporting surface area is indicated as being contactable with the sheet transferred by the sheet transfer member while extending to be contactable with the sheet between the transfer

surface and the information reading point. An information reader is arranged to face the sheet transferred by the sheet transfer member, and has an information reading range that includes an information reading point so that information is securely readable from one of the sheets. The Office Action indicates that when seen in a view direction perpendicular to a thickness direction of the one of the sheets transferred by the sheet transfer member, a tangential line of a boundary point of the transfer surface of the sheet member where the one of the sheets starts to separate from the transfer surface extends in a side area of an imaginary straight line passing the information reading point and the boundary point. The Office Action further asserts that the side area includes the sheet supporting surface area and that the tangential line intersects the sheet supporting surface area as seen in a view direction in order to press the sheet against the sheet supporting surface area.

Applicants respectfully disagree.

Independent claim 1 defines an apparatus for handling sheets that comprises:

- a sheet transfer member being movable, and having a transfer surface contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member,

- a sheet supporting surface area being contactable with the one of the sheet transferred by the sheet transfer member, said sheet supporting surface extending to be contactable with the one of the sheet between the transfer surface and the information reading point, and

- an information reader arranged to face to the one of the sheet transferred by the sheet transfer member and having in an information reading range including an information reading point, in which reading range an information is securely readable from the one of the sheets,

- wherein as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member, a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer

surface extends in a side area of an imaginary straight line passing the information reading point and the boundary point, which side area including the sheet supporting surface area, and

wherein the tangential line intersects the sheet supporting surface area as seen in the view direction to press the one of the sheets against the sheet supporting surface area.

The apparatus of independent claim 1 includes a sheet transfer member, a sheet supporting surface area, and an information reader. The sheet transfer member is movable and has a transfer surface that can contact the sheets so that the sheet is transferred. The sheet supporting surface area makes contact with the sheet being transferred by the sheet transfer member and extends such that it contacts the sheet between the transfer surface and the information reading point. The information reader is arranged to face the sheet being transferred and has an information reading range that includes an information reading point in order to read information from the sheet being transferred. According to independent claim 1, when seen in a view direction that is perpendicular to the thickness direction of the sheet and the transfer direction of the sheet transfer member, a tangential line of the boundary point of the transfer surface of the sheet transfer member from which the sheet starts to separate away from the transfer surface extends in an area of an imaginary straight line passing the information reading point and the boundary point with the side area including the sheet supporting surface area. The tangential line intersects the sheet supporting surface area as seen in the view direction to press the sheet against the sheet supporting surface area.

The Office Action alleges that Kawasaki discloses all the features recited in independent claim 1. This does not appear to be the case. Kawasaki discloses a method and apparatus for detecting whether sheet materials are double fed or not. An external force application member is used to apply an external force to a sheet

material by bringing an external force applicator into contact with the sheet material. A detector detects the external force being applied and determines whether the sheet materials are double fed or not based on a signal obtained from the detector. Contrary to the present invention, Kawasaki provides no disclosure or suggestion for a structure that would enable a sheet having a straight shape to be pressed against the sheet supporting surface area by the sheet transfer member when the information is read from the sheet at the information reading point in the information reading range. Rather, Kawasaki only provides a structure wherein the sheet must necessarily be curved or bent in order to be pressed against any surface.

According to independent claim 1, however, an arrangement is provided wherein a tangential line intersects the sheet supporting surface area. This allows a sheet having a straight shape to be pressed against the sheet supporting area by the sheet transfer member when the information is read from the sheet at the information reading point in the information reading range. Contrary to the assertions made in the Office Action, Kawasaki fails to provide any disclosure or suggestion for features recited in independent claim 1, such as:

wherein as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member, a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface extends in a side area of an imaginary straight line passing the information reading point and the boundary point, which side area including the sheet supporting surface area, and

wherein the tangential line intersects the sheet supporting surface area as seen in the view direction to press the one of the sheets against the sheet supporting surface area.

It is therefore respectfully submitted that independent claim 1 is allowable over the art of record.

Claims 3, 6-8, 10-12, 14, 15, 17-20, 25, and 26 depend from independent claim 1, and are therefore believed allowable for at least the reasons set forth above with respect to independent claim 1. In addition, these claims each introduce novel elements that independently render them patentable over the art of record.

Independent claim 9 defines an apparatus for handling sheets that comprises:

- a sheet transfer member being movable, and having a transfer surface contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member,

- a sheet supporting surface area being contactable with the one of the sheet transferred by the sheet transfer member,

- an information reader arranged to face to the one of the sheet transferred by the sheet transfer member and having in an information reading range including an information reading point, in which reading range an information is securely readable from the one of the sheets, and

- a press member being opposed to the sheet transfer member in such a manner that the one of the sheets is allowed to be pressed between the sheet transfer member and the press member at a boundary point in a press direction,

- wherein an imaginary straight line passing the boundary point in a direction perpendicular to the press direction intersects the sheet supporting surface area as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

According to at least one feature of independent claim 9, an imaginary straight line passing the boundary point in a direction perpendicular to the press direction intersects the sheet supporting surface area as seen in a view direction perpendicular to a thickness direction of the sheet being transferred and along a transferred direction of the sheet by the sheet transfer member.

The Office Action alleges that Kawasaki discloses all the features recited in independent claim 9. However, the assertion that Kawasaki discloses an imaginary straight line as recited in the claimed invention is misplaced. As clearly illustrated in Fig. 17 of Kawasaki, an imaginary straight line passing the boundary point in the direction perpendicular to the press direction does not intersect any of the surfaces. Consequently, Kawasaki fails to disclose features recited in independent claim 9, such as:

wherein an imaginary straight line passing the boundary point in a direction perpendicular to the press direction intersects the sheet supporting surface area as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

It is therefore respectfully submitted that independent claim 9 is allowable over the art of record.

Claim 27 depends from independent claim 9, and is therefore believed allowable for at least the reasons set forth above with respect to independent claim 9.

IV. Rejections under 35 USC §103

Claims 16 and 21 were rejected under 35 USC §103(a) as being unpatentable over Kawasaki in view of Henry, and further in view of Kako. Regarding this rejection, the Office Action alleges that Kawasaki discloses all of the features of the claimed invention, except for an information reader having a pair of input points opposed to each other. Kako is relied upon for disclosing a sheet handling apparatus having multiple information reader input points located on one side of each other such in such a manner that the input points face the side of the one of the

sheet in a thickness direction of the one of the sheets to read the information through the input points. The Office Action concludes that it would have been obvious to modify the teachings of Kawasaki in view of Henry and Kako to include an information reader having a pair of input points in order to reduce the size of the information reader. Applicants respectfully disagree.

Independent claim 16 defines an apparatus for handling sheets that comprises:

a sheet transfer member being movable, and having a transfer surface contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member,

a sheet supporting surface area being contactable with the one of the sheet transferred by the sheet transfer member, and

an information reader arranged to face to the one of the sheet transferred by the sheet transfer member and having in an information reading range including an information reading point, in which reading range an information is securely readable from the one of the sheets,

wherein as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member, when the sheet supporting surface area extends straightly in parallel to a support line direction and passes the information reading range, α is an inclination angle between the support line direction and a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface, L is a distance between the boundary point of the transfer surface of the sheet transfer member and the information reading point in the support line direction, h is a distance between the boundary point of the transfer surface of the sheet transfer member and the sheet supporting surface area in a direction perpendicular to the support line direction, μpg is a frictional coefficient between the one of the sheets and the transfer surface of the sheet transfer member, and J is a distance in the direction perpendicular to the support line direction between the boundary point and an intersecting point between an imaginary line passing the information reading point and extending perpendicular to the support line direction and an imaginary line passing the boundary point of the transfer surface of the sheet transfer member and extending perpendicular to the tangential line of the boundary point of the transfer surface of the sheet transfer member, $J < (L^2/h)$, and $\alpha < \tan^{-1}(1/\mu pg)$.

According to at least one feature of independent claim 16, a specific mathematical relationships, defined as $J < (L^2/h)$, and $\alpha < \tan^{-1}(1/\mu_{pg})$ exist when observed in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

While the Office Action purports to allege that the cited references disclose all the features recited in independent claim 16, no attempt has been made to identify where these references even remotely suggest such relationships. In fact, the references appear to be completely silent on any type of mathematical relationship that could resemble the features recited in independent claim 16.

It is therefore respectfully submitted that independent claim 16 is allowable over the art of record.

Independent claim 21 defines an apparatus for handling sheets that comprises:

- a sheet transfer member being movable, and having a transfer surface contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member,

- a sheet supporting surface area being contactable with the one of the sheet transferred by the sheet transfer member,

- an information reader arranged to face to the one of the sheet transferred by the sheet transfer member and having in an information reading range including an information reading point, in which reading range an information is securely readable from the one of the sheets, and

- a distance detector arranged to face to the one of the sheets so that a value changing in accordance with a change in distance between the one of the sheets and the information reader is measured by the distance detector,

- wherein the information reader includes a light emitter for projecting a light to the one of the sheets and a light receiver for receiving the light reflected by the one of the sheets to read the information from the one of the sheets, and the light emitter is

controlled in accordance with the value in such a manner that an intensity of the light emitted by the light emitter is increased in accordance with the increase of distance between the one of the sheets and the information reader.

According to some of the features of independent claim 21, the information reader includes a light emitter for projecting a light to the sheet being transferred and a light receiver for receiving the light reflected by the sheet in order to read the information from the sheet. Furthermore, the light emitter is controlled in accordance with a value such that an intensity of the light emitted is increased in accordance with the increase in distance between the sheet being transferred and the information reader. More particularly, the intensity of the light emitted as part of the information reader is increased in accordance with an increase in distance between the sheet and the information reader.

The Office Action fails to indicate where, or how, the cited references disclose these particular features. Applicants' review of the cited references has also failed to reveal any disclosure or suggestion for such features.

It is therefore respectfully submitted that independent claim 21 is allowable over the art of record.

Claim 24 was rejected under 35 USC §103(a) as being unpatentable over Kawasaki in view Rabb. Regarding this rejection, the Office Action indicates that Kawasaki discloses all the features of the claimed invention, except for a pneumatic blower for applying pneumatic pressure to the one of the sheets. Rabb is relied upon for disclosing a sheet handling apparatus wherein a pneumatic blower is provided for applying pneumatic pressure to one of the sheets in such a manner that the sheet is urged by the pneumatic pressure to be pressed against the sheet supporting surface area. Applicants respectfully disagree.

As amended, independent claim 24 defines an apparatus for handling sheets that comprises:

a sheet transfer member being movable, and having a transfer surface contactable with one of the sheets so that the one of the sheets is transferred by the sheet transfer member,

a sheet supporting surface area being contactable with the one of the sheet transferred by the sheet transfer member,

an information reader arranged to face to the one of the sheet transferred by the sheet transfer member and having in an information reading range including an information reading point, in which reading range an information is securely readable from the one of the sheets supported by the sheet supporting surface area, and

a pneumatic blower for applying a pneumatic pressure to the one of the sheets in such a manner that the one of the sheets is urged by the pneumatic pressure to be pressed against the sheet supporting surface area.

According to at least one feature of independent claim 24, the apparatus includes an information reader that is arranged to face the sheet transferred by the sheet transfer member. The information reader also includes an information reading range that includes an information reading point. This allows information in the reading range to be securely readable from the sheet supported by the sheet supporting surface area.

Contrary to the assertions made in the Office Action, review of the cited references has failed to reveal any disclosure or suggestion for features now recited in independent claim 24. In particular, Rabb appears to disclose a pneumatic blower that deflects or bends the sheet. However, this pneumatic blower does not press the sheet against the sheet supporting surface area to enable information to be securely read from the sheet. The cited references fail to provide any disclosure or suggestion for reading information from the sheet pressed against the sheet

supporting surface area by the pneumatic blower or the sheet supported by the sheet supporting surface area when the information is read from the sheet.

It is therefore respectfully submitted that independent claim 24 is allowable over the art of record.

Claim 28 depends from independent claim 24, and is therefore believed allowable for at least the reasons set forth above with respect to independent claim 24.

V. Conclusion


For the reasons stated above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a Notice of Allowance is believed in order, and courteously solicited.

If the Examiner believes that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

AUTHORIZATION

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 500.43486X00).

Respectfully submitted,
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